



UNITED STATES NAVY

MEDICAL NEWS LETTER

Vol. 38

Friday, 18 August 1961

No. 4

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United States Navy
MEDICAL NEWS LETTER.

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No. 4

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.

Polycythemia Secondary to Pheochromocytoma

J. E. Bradley, J. D. Young Jr, and George Lentz, Depts of Pediatrics and Urology, University of Maryland School of Medicine, Baltimore, Md. J Urol 86:1-6, July 1961.

Pheochromocytoma, a tumor of chromaffin sympathetic nerve tissue was probably described first by Frankel in 1886. Correlation of tumor and clinical symptoms did not occur until 1929 when Pincoffs made the first correct preoperative diagnosis followed by successful removal of the tumor. Subsequently, there developed an increasing recognition of pheochromocytoma as a clinical entity. The reported occurrence in children is less than 5%; indeed, only 10 diagnosed cases had been reported in children up to 1951.

A majority of the tumors are located in the adrenal and are solitary. However, 25% are bilateral and approximately 15% are extra-adrenal. To find more than two tumors in either children or adults is unusual, though Hubble reported four tumors in an 11-year old boy who died 7 hours after operation.

The outstanding symptoms of pheochromocytomas are those of hypertension and vasomotor instability. Polyuria and polydipsia simulating diabetes insipidus, blood sugar curves not unlike diabetes mellitus, and Cushing's syndrome in a 16-month infant have also been reported in association with pheochromocytoma. Review of the literature has failed to show any cases of pheochromocytoma in children associated with polycythemia.

The purpose of this communication is to report the association of multiple (four) pheochromocytomas with polycythemia in a 10-year old white boy.

Pheochromocytoma in children is associated more often with sustained rather than paroxysmal hypertension. The cause of the hypertension has been attributed by many to the increased excretion of catecholamines. The noradrenaline content of the adrenal gland in the child is about 90% of the total catechols, while in the adult it is only 14%. Beyer and co-workers conceptualized that noradrenaline is a stage in the normal evolution of adrenaline and that, in childhood, this process is not fully developed. Thus, the sustained hypertension observed in the child may be a reflection of the differences peculiar to the age. The blood pressure in the authors' patient was sustained and the catecholamine excretion was 792 and 1014, all of which was noradrenaline.

The easily obtained adrenergic blocking effect in these cases suggests that the hypertension is due to the increased secretion of adrenaline and/or noradrenaline by the tumor. However, persistence of hypertension, following removal of the tumor with the return of

catechol excretion to normal and in the absence of demonstrable renal or extrarenal factors, suggests that there may be other factors responsible for the hypertension. The reported patient had a substantial reduction of blood pressure following the removal of the pheochromocytomas; however, the blood pressure remained at hypertensive levels until 11 months later when it was determined to be 118/80 mm/Hg, a normotensive level. The only demonstrable abnormality at this time is the persistence of electrocardiographic findings of myocardial damage. Renal function and catecholamine excretion have been normal.

Polycythemia is unusual in childhood and when seen has been secondary to cardiac disease, chronic pulmonary disease, residence at high altitudes, subtentorial tumors, and intoxications such as coal tar derivatives, cobalt, or aniline dyes.

Polycythemia has been reported in adults in association with hypernephroma, multiple myeloma, and, possibly in one case, of Cushing's disease. The nature of the stimulus to produce polycythemia is unknown. The most attractive theory is the existence of a plasma erythropoietic stimulating factor, erythropoietin.

These tumors were bioassayed for erythropoiesis stimulating activity by Dr. Thomas Waldmann, senior investigator, National Cancer Institute. Dr. Waldmann commented as follows: "On subcutaneous injection of the saline extract of tumor tissue, there was a significant stimulation of erythropoiesis in the fasted rat as shown by an elevated Fe-59 incorporation into red blood cells compared to those animals which received 2 ml of normal plasma or 5% albumin solution. The serum of the patient prior to operation also demonstrated some erythropoiesis stimulating activity.

Groups of 6 rats given adrenocorticotrophic hormone, adrenaline, cortisone, and a saline extract of normal dog adrenal had an 18-hour Fe-59 incorporation comparable to normal plasma. This differentiates the known erythropoietically active substances in the pheochromocytoma extract."

The concurrence of pheochromocytoma and polycythemia in a child has not been reported previously. That a relationship existed in the authors' case is supported by the change with surgical removal of the tumor in the physical appearance of the child (the striking rugor "ruddy cyanosis" which was replaced by a normal type of coloring and which has been maintained); by the return of the hemoglobin from an admission value of 21 gm to 13.5 gm 11 months later; and the red cell mass which preoperatively was 40 cc/kg, and postoperatively was a normal 26 cc/kg.

It would seem highly improbable that the preoperative phlebotomy and operative blood loss could account for the remarkable return of the physical appearance and the hematologic studies to

normal. A more reasonable explanation would seem to be that the pheochromocytomas disturbed the humoral control of the erythropoietic stimulating factor. The demonstration of erythropoietic stimulation in the tumors by Dr. Waldmann adds support to this concept.

The effect of adrenaline and noradrenaline on hemoglobin concentration, packed red cell volume, plasma volume, and plasma protein concentration has been studied in both animals and in humans. The studies suggest that prolonged administration of endogenously or exogenously produced vasopressors results in a reduction of total blood volume. Brunjes and associates, concerned with the operative and immediate postoperative management of patients with pheochromocytoma, studied the red cell mass, plasma volume, and whole blood volume, pre- and postoperatively, in 3 patients. They then postulated that a decreased red cell mass and chronic hypovolemic state may be present preoperatively in patients with pheochromocytoma.

The authors' patient had an increased red cell mass and decreased blood volume preoperatively. The operative and preoperative course was remarkably smooth and uncomplicated except for mild iatrogenic electrolyte disturbance.

From the experience in this single case, it is suggested that the presence of a pheochromocytoma be excluded in those cases of polycythemia with hypertension.

Hypertension and polycythemia are reported in a 10-year old boy. Four pheochromocytomas were removed surgically with gradual return of the blood pressure to normal and rapid disappearance of the polycythemia. Bioassay of the tumors revealed the presence of erythropoietic stimulating activity.

* * * * *

Alkaline Phosphatase and Kidney Injury

After injury to the kidney of an experimental animal, there is a decrease in alkaline phosphatase in the cells of the proximal convoluted tubules and a rise in serum levels. It is postulated that the increase in serum levels is the result of leakage of the enzyme from injured cells into the circulation. If alterations in serum alkaline phosphatase levels in human subjects with kidney injury are similar to those in the experimental animal, such determinations may be of diagnostic and prognostic value. (N. Viek, et al, J Urol, May 1961)

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Retinopathy Associated with
Chloroquine Phosphate Therapy

R.D. Richards and W.R. Wilson, Depts of Ophthalmology
and Internal Medicine, State University of Iowa, Iowa City,
Iowa. Amer J Med XXXI: 140-143, July 1961.

Chloroquine phosphate (Aralen) was first introduced as an antimalarial drug, but in the past few years it has been used in the treatment of amebiasis, disseminated and discoid lupus erythematosus, and rheumatoid arthritis. Soon after its introduction, transitory visual symptoms were noted by many patients. The reason for these visual difficulties was not determined. More serious toxic effects were reported in 1958 when corneal deposits were observed in some patients who had been taking large doses of chloroquine phosphate for 4 to 8 weeks. The symptoms associated with the corneal changes were blurring of vision and halos around lights. The symptoms and corneal deposits sometimes improved markedly, sometimes disappeared with discontinuance of the drug.

Nevertheless, visual disturbances have not been generally regarded as a problem in the long term treatment of lupus erythematosus and rheumatoid arthritis with chloroquine phosphate. Bagnall, in a 4-year study of the use of chloroquine phosphate in rheumatoid arthritis, did not report any significant ocular symptoms. Young, describing the results of chloroquine phosphate therapy for 18 to 36 months in fifty consecutive patients with rheumatoid arthritis, stated that toxic reactions were infrequent, mild, and easily reversible. In a report on rheumatic diseases, however, the Committee of the American Rheumatism Association stated that toxic reactions to the administration of chloroquine, such as blurring of vision, developed in some patients and occasionally necessitated withdrawal of the drug.

Recently, Hobbs, Sorsby, and Freedman reported a serious complication of chloroquine phosphate therapy. In three patients reduction of the visual field and impaired central vision developed. Ophthalmoscopic examination revealed marked narrowing of the retinal arteries and abnormalities of the macula, consisting of edema or pigmentation. All three patients had been treated with large doses of chloroquine phosphate for approximately 3 years for either discoid lupus erythematosus or rheumatoid arthritis. The visual changes did not regress after the administration of chloroquine phosphate was discontinued. The authors report a patient who showed similar changes while taking chloroquine phosphate for an extended period of time. Drugs such as quinine, aspidium, salicylates and ergot are known to cause visual changes. These are

characterized by peripheral constriction of visual fields, the ophthalmoscopic examination usually showing narrowing of the retinal arteries. Macular edema may appear as an early sign, followed by optic atrophy. It would seem reasonable to include chloroquine phosphate in this group on the basis of the retinal changes observed.

The pathogenesis of these changes is not known. These drugs may act directly on the nerve elements, but the marked vasoconstriction seems to be an important part of the picture.

Other conditions which may show somewhat similar changes should be considered in the differential diagnosis. Central serous choroidosis usually affects young men and presents a clinical picture of edema of the macula. The condition is usually unilateral, however, and the retinal arteries are not narrowed. Also, hemorrhages around the macula are sometimes present. Braley and Hamilton reported on patients with central serous choroidosis associated with amebiasis, but the characteristic finding was a cyst in the macula. Woods and Wahlen reported retinal findings associated with a positive histoplasmin reaction. These consisted of a small subretinal cyst in the macula with surrounding edema, often hemorrhages, and peripheral lesions consisting of focal spots of atrophic chorioretinitis. Toxoplasmosis often affects the macula, but usually is associated with very marked proliferation of pigment as well as other areas of chorioretinitis in the periphery. Disciform degeneration of the macula is characterized by hemorrhages followed by proliferation of connective tissue between the retina and choroid. Retinitis pigmentosa is characterized by marked narrowing of the retinal arteries, a waxy disc, and pigmentary proliferative changes in the periphery.

Two other reports of visual changes after the administration of chloroquine phosphate therapy suggest a similar retinopathy, but there are not enough sufficient details to be sure. Sternberg and Laden reported bilateral macular degeneration in a 32-year old woman after being treated for discoid lupus erythematosus for 4-1/2 years with chloroquine phosphate. A description of the retinal lesions and the visual field changes was not given. Goldman and Preston reported that in two patients retinal changes developed after their treatment with the administration of large doses of chloroquine phosphate for lupus erythematosus. The ophthalmoscopic findings were not described, but one patient was reported to have had constricted visual fields. At the postmortem examination the eyes were removed and examined histologically, but no cause for the visual change was found.

It is possible that additional patients have retinal changes caused by long-term chloroquine phosphate therapy, but these may

have been overlooked since the relationship of retinopathy to chloroquine phosphate has been reported so recently.

After 2-1/2 years of chloroquine phosphate therapy for rheumatoid arthritis, the authors' patient had visual field loss, decreased central vision, corneal deposits, and retinopathy consisting of marked arterial constriction and edema of the macula.

Since the visual loss is apparently permanent, patients on long-term chloroquine phosphate therapy should have periodic ocular examinations with special emphasis on slit lamp, ophthalmoscopic, and visual field examinations.

* * * * *

Chloroquine Resistance in Plasmodium Falciparum

The response to chloroquine of a strain of *Plasmodium falciparum* malaria from Colombia, South America, has been studied in seven patients. Six of these infections responded poorly to normal doses of the drug (0.6 gm, 1.5 gm) and above normal (2.1 gm). The parasites were either not cleared from the blood stream or were eliminated slowly, after which they relapsed quickly. In two instances, 1.5 gm of chloroquine failed to eliminate the parasitemia; and in two other instances, the parasites increased after a 600-mg single dose.

So far as the authors know, this is the first time that resistance of human malaria to chloroquine has been shown definitely. Chloroquine is widely used throughout the world in the treatment and suppression of clinical malaria. It is being used in malaria eradication programs as a complementary measure and in special situations where insecticiding measures are not satisfactory or feasible as the main attack on malaria. The occurrence of resistance to this drug by the malaria parasite appears to have important implications in the chemotherapy of this disease.

These findings indicate that this strain of malaria is resistant to the usual doses of chloroquine. The resistant quality was still present after mosquito passage. (M.D. Young and D. V. Moore, *Amer J Trop Med*, May 1961)

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Navy Directives. At times, attention is invited to directives of general concern. For economy of space, they are briefly described. Complete copies usually are available at local administrative or personnel offices. When not available locally, copies usually may be obtained from Navy Supply Center, Oakland, Calif., or Norfolk, Va., or Supply Dept., Naval Weapons Plant, Washington 25, D. C.

OXYGEN THERAPY SERVICE
U.S. Naval Hospital, St. Albans, N. Y.

The Inspector General, Medical, for the U.S. Navy, Rear Admiral Langdon C. Newman MC USN, has informed the News Letter that the U.S. Naval Hospital, St. Albans, N. Y., has recently established an "Oxygen Therapy Service." Admiral Newman added that he was much impressed with this new Service Division at St. Albans and that the Command as a whole was very enthusiastic in its praise of the service rendered. This is the only known U.S. Naval Hospital that operates such a service. He feels that the following information is worthy of publishing for its possible value to other naval hospitals:

Resume of NAVHOSP INSTRUCTION 6401.4A
St. Albans, N. Y., 26 May 1961

The purpose of the Instruction is to supply information regarding the establishment of an Oxygen Therapy Service as part of the Department of Internal Medicine, which is to function in conjunction with the Cardiopulmonary Laboratory and the Department of Anesthesiology. Over-all responsibility is assigned to the Chief of Medicine.

The objective of the new Oxygen Therapy Service is to provide better patient care; improve the care and use of all associated equipment and to afford training for personnel in resuscitation, oxygen therapy, and the efficient use of these procedures.

The Instruction requires that the Oxygen Therapy Service shall formulate and conduct a training program in resuscitation, oxygen therapy, and related entities for Medical and Nurse Corps officers and enlisted personnel.

The new Instruction requires that the Oxygen Therapy Technician Watch shall be called to the ward in acute emergencies and when routine oxygen therapy is needed. When contacted by telephone, the watch must be informed of the nature of the problem so that he may anticipate the type of equipment which may be necessary to meet the needs of the patient requiring therapy.

Other Responsibilities and Operational Duties of the Oxygen Therapy Technician Watch

- a. Acute Problems such as Respiratory and Cardiac Arrest
 1. Establish patent airway.

2. Institute mouth-to-mouth respirations.
 - (a) Ventilation is begun by mouth-to-mouth respirations.
 - (b) Appropriate mechanical respirator, if immediately available in the vicinity of the patient, should be utilized only by trained personnel.
 3. Perform closed chest cardiac massage.
 - (a) A second person should confirm the presence of a heart beat. If the heart beat is not detected, closed chest cardiac massage by a person familiar with its technic, should be performed immediately.
 4. Call Oxygen Therapy Watch and ward medical officer.
 - (a) The Oxygen Therapy Technician Watch and the ward medical officer should be contacted simultaneously.
- b. Routine Problems of Tents, Nasal Catheters, Oxygen Masks
1. Institute therapy.
 - (a) When the ward medical officer's order is noted regarding routine oxygen therapy, the ward personnel shall be responsible for the institution of treatment in the usual manner.
 2. Notify Oxygen Therapy Technician Watch.
 - (a) The technician shall be called to the ward and examine the equipment in use and test the concentration in tents, and instruct ward personnel in the proper maintenance of the equipment. If the oxygen therapy technician believes that the existing equipment may be enhanced by substitution or additions, he shall recommend the necessary changes.
- c. Special Equipment and Service which may be Obtained from Oxygen Therapy Department.
1. This shall include Bird valves, nebulizers, humidifiers, Melcho-humidifiers, nipped tracheostomy tubes, and other non-routine types of respiratory assistance equipment.
 2. The Oxygen Therapy Watch shall be notified of the ward medical officer's orders and a technician shall report to the ward with the appropriate equipment and institute the procedure.
 3. If equipment is to be used intermittently, and if applicable, the technician will instruct the ward personnel in its use.
 4. No adjustment of the equipment shall be made by the ward personnel except in extreme emergencies, at which time the Oxygen Therapy Technician shall be notified.
 5. Any problems regarding the use of the equipment are to be brought immediately to the attention of the Oxygen Therapy Department.
- d. Notify Oxygen Therapy when Equipment Discontinued.
1. When equipment is assigned to a ward, it shall be that ward's responsibility to notify Oxygen Therapy Department of its discontinuance.

2. Return the equipment to the Oxygen Therapy Department after initial cleaning.

e. Cleaning of Equipment Shall be Done by Ward Personnel.

1. Oxygen tent canopies shall be washed with Alconax or other suitable detergent followed by water rinsed with alcohol.

2. Mouthpieces and equipment coming into direct contact with the patient's airway shall be washed with Alconax and then rinsed with water.

3. All nipped and/or cuffed tracheostomy tubes are to be cleaned with peroxide and rinsed and returned to the Oxygen Therapy Service.

f. Ward Personnel Shall be Responsible for:

1. Procurement of oxygen tanks

2. Changing oxygen tanks

3. Changing and emptying of ice and water from croupettes and oxygen tents.

4. Cleaning of equipment while on the ward and prior to return to the Oxygen Therapy Department.

The following General Information is quoted verbatim from the hospital's new Instruction: "Any question involving the use and/or maintenance of equipment or problems relating thereto shall be referred to the Oxygen Therapy Watch. Even though a 24-hour service is available to every sector of the hospital, routine problems of clarification or problems relating to equipment not emergently needed and other similar consultations should be made during the routine working hours.

If any of the above equipment is needed for better patient care, do not hesitate to call the oxygen therapist. In addition, it is emphasized that when any new oxygen therapy is instituted or discontinued, the Oxygen Therapy Watch is to be notified.

There is also an On Board physician watch in the Oxygen Therapy Department as well as a telephone supervisory watch, in addition to the enlisted Oxygen Therapy Technician. These Medical officers shall be called only on the request of the enlisted watch or attending physician, except in emergencies. Request for equipment of the type under cognizance of, or intended for use by, Oxygen Therapy Service should be submitted for comment to that service prior to procurement."

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Prevention of Heat Casualties in Marine Corps Recruits

The present program for preventing heat casualties in recruits at the Marine Corps Recruit Depot, Parris Island, S. C., recognizes the epidemiologic principle that mass diseases result from the interaction of multiple factors. In case of heat casualties, these are related to climatic heat (agent), the trainee (host), and the training center (environment).

At MCRD, climatic heat is evaluated using the Wet-Bulb Globe Temperature Index of Yaglou which is derived from readings of three simple thermometers (wet-bulb; 6" black globe; shade dry bulb) and is calculated as follows: $WBGT \text{ Index} = .7 \text{ WB} + .2 \text{ GT} + .1 \text{ DB}$. It takes into account not only air temperature and humidity but wind and radiant heat as well. The WBGT Index correlates well with physiologic effects of heat in both hot dry (desert) and hot wet (tropical) climates.

Training for new recruits is curtailed at lower levels of heat stress (WBGT 85 and over) than for more seasoned recruits (WBGT 88 and over). This procedure has resulted in less loss of training hours than under former regulations which treated all recruits alike.

Other important elements in the program are: a breaking-in period; greater emphasis on physical fitness; special conditioning platoons for obese recruits; liberal allowance of water and salt; rational clothing practices; and indoctrination of drill instructors and recruits in elements of hot weather hygiene.

From 1956, when the program was adopted, through the summer of 1960, the incidence rate of heat casualties in recruits at Parris Island has been consistently and significantly lower than in four other categories of Marine Corps trainees despite higher levels of summer heat at Parris Island compared with the other training centers. (CAPT David Minard MC USN. Milit Med 126:261, April 1961)

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Complications Following Gastric Resection

Two hundred and fifty-nine consecutive subtotal gastrectomies have been performed for gastric or duodenal ulcer in an 8-year period with a mortality of 3.1%. The mortality was 15.6% following emergency gastric resection in patients with massive bleeding. In all other patients with an ulcer, the mortality was 1.3%.

Twenty-five percent of all patients had one or more significant complications. Complications were found to be three or four times as frequent in patients operated on within the first week after

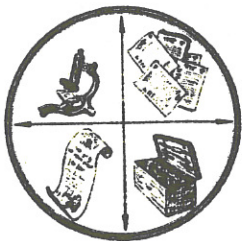
admission to the hospital as in patients hospitalized for 4 weeks or more prior to operation. In addition, postoperative complications were more frequent and more severe in patients operated on for active ulceration than in patients in whom the ulcer was already healed at the time of surgery.

Although the mortality following urgent surgery for massive bleeding was higher than for the remainder of the group, the total number of patients with complications (including patients who died) was fewer than among patients operated on for symptoms other than massive bleeding within the first 2 weeks after admission.

An interval gastrectomy or prophylactic gastrectomy performed after the ulcer has healed is advocated as the safest plan for definitive surgical treatment of gastric and duodenal ulcer. As it is not always practicable to wait for complete healing of the ulcer, it is recommended that surgery be deferred whenever possible until pain from the ulcer and abdominal tenderness have disappeared.

Although postoperative morbidity is least in patients who have had at least 4 weeks of hospitalization prior to surgery, a period of 2 or more weeks of hospitalization prior to operation is in itself sufficient to result in a marked reduction in the incidence and severity of postoperative complications. (F. P. Turner, Amer J Surg, June 1961)

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MISCELLANY

Effects of Radiation on the Heart

In twenty patients receiving large doses of radiation to the heart, no significant cardiac damage was detectable clinically or by electrocardiograms or serum glutamic oxalacetic transaminase (SGOT) determinations. In two patients, ECG evidence of transient pericarditis developed. In four patients with ECG changes suggestive of reversible myocardial damage, only one had simultaneous SGOT elevations. If cardiac damage is induced by irradiation, it appears to be of such insignificance that modification of adequate present-day radiotherapeutic technics is not justified. (J. Vaeth, et al, Radiology, May 1961)

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DASA - TRIGA Mark-F Reactor/Training

Twelve officers of the Army, Navy, and Air Force are undergoing training at San Diego, Calif., with a unique type of atomic reactor which the Department of Defense will use to test the biomedical effects of intense nuclear radiation.

The specially selected officers who are attending daily classes at the TRIGA reactor center of General Dynamics Corporation's General Atomic Division, will form the cadre of the staff of the new Armed Forces Radiobiology Research Institute which is under construction at the National Naval Medical Center in Bethesda, Md.

The Institute, involving a \$5 million over-all investment, is being established by the Defense Atomic Support Agency, headed by Major General Robert H. Booth. The Institute will be under the management control of Secretary of the Navy, and under military control of Commanding Officer, National Naval Medical Center.

Rear Admiral Courtney Shands, Deputy Chief of DASA, was on hand for the opening of the course and told the 12 trainees that as officers of the Institute's reactor project, they will be contributing to advanced research of a broad nature, including the treatment of diseases "in the interest of our national welfare and the good of mankind."

During the 19-week course, the officers of the three services are using General Atomic's operating prototype of the new-concept TRIGA Mark-F "pulsing" reactor to be installed as the primary research tool of the Institute. Each of the 12 officers holds a Master's degree or Doctorate in Science, Engineering, or Mathematics, and several have had nuclear experience.

The Mark-F TRIGA, because of its self-regulating characteristics and built-in safety features, is able to simulate—under controlled laboratory conditions—the bursts of intense neutron and gamma radiation associated with explosions of nuclear weapons. These "pulses" will help scientists to determine the extent of biologic radiation damage for varying doses, rates, and distances of exposure. These data will aid in developing improved methods for combating radiation sickness and for establishing shielding measurements.

Investigations also will be made into the use of controlled, safe amounts of nuclear energy for the treatment of cancer and other diseases as well as in the fields of health physics and radiation shielding.

"Other federal agencies, as well as civilian institutions, may, on a scheduled basis, utilize the facilities of the Institute," Rear Admiral Shands said. "Although our prime interest is in studying the effects of nuclear weapons, the Institute may be utilized for

research in the total field of radiobiology and in the treatment of diseases, if so desired by the proper authority."

The TRIGA Mark-F reactor at the Institute, like its prototype at San Diego, will be capable of being "pulsed" for a few milliseconds to peak energy levels of 1,200,000 thermal kilowatts, with a corresponding controlled output of intense neutron and gamma radiation.

The reactor reaches this peak level in less than a twentieth of a second, then restores itself—instantaneously and automatically—to a normal operating power without use of control rods or other mechanical devices. For the split second that it is at 1,200,000 kilowatts, it is producing the equivalent of the electric power required by the District of Columbia's more than a million people.

This self-regulating characteristic, known scientifically as a "prompt negative temperature coefficient," is made possible by the TRIGA's unique homogeneous fuel elements of uranium-zirconium hydride. It works much like a thermostat, to bring the reactor's power level down before any overheating can occur. There is no mechanical safety system that could shut the reactor down as quickly as it shuts itself down.

The first phase of the DASA training course at General Atomic will continue until September when the 12 officers will be joined by another group of 9 to 15 trainees consisting of additional members of the Institute staff and representatives of agencies which will originate research programs for the Institute. Later, after the reactor facility is operating at Bethesda, they will participate in 5 weeks of "on site" training there.

The Institute's initial staff will consist of 21 commissioned officers—7 from each service—and the reactor facility will have a staff of approximately 100 including both military and civilian personnel.

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Admiral Anderson New President Navy Mutual Aid

Admiral George W. Anderson Jr, USN, was elected President of the Navy Mutual Aid Association by the Board of Directors. Admiral Anderson succeeds Admiral Arleigh Burke who resigned from the Presidency upon his retirement from active duty on 1 August 1961.

Admiral Burke will continue to serve as a member of the Board of Directors. During the past 6 years under the leadership of Admiral Burke the number of members increased from 13,000 to over 32,000 and the benefit was increased by one third, from \$7,500 to \$10,000. The services to widows and dependents of the

members of the Navy Mutual Aid Association were also greatly expanded.

The election of Admiral Anderson to the office of President of the Association continues a precedent established more than 40 years ago when Chief of Naval Operations, Admiral W.S. Benson USN was chosen to head the Association. Succeeding Admiral Benson as President have been Admirals Koontz, Eberle, Hughes, Upham, Stanley, Leahy, Stark, King, Denfeld, Sherman, Fechteler, Carney, and Burke. Admiral Anderson has been a member of Navy Mutual Aid for over 25 years and has served as a Nonresident Director for the past 6 years.

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Information on Release of New Film

Medical, paramedical, and lay members of hospital staffs will be interested in the motion picture, Radiation Protection in Nuclear Medicine, (MN-9419), recently released by the Bureau of Medicine and Surgery. This film demonstrates procedures devised for U.S. Naval Hospitals, to protect against the gamma radiation emitted from materials used in radiation therapy. Its principles are applicable in all hospitals.

The picture is in color and is 45 minutes long. Prints are being distributed to Naval Hospitals, Hospital Corps Schools, and Naval and Marine Corps training-aids libraries.

The practices demonstrated are based on three principles established at the outset. The opening section explains the nature of gamma radiation so far as is necessary to make clear how time, distance, and shielding are used to provide protection from its harmful effects. Time is considered in two ways: as regards the half-life of the radioactive materials used, and in the sense of speed in handling them.

The body of the film shows the continuous application of these principles from the moment radioactive materials are received at the hospital, through their storage, preparation for use, therapeutic administration, the nursing care of radioactive patients, and disposal of radioactive human waste. This part of the film details the special technics and equipment used in the handling of radium and radioactive gold, iodine, and iridium as representing the variety of such materials which hospital personnel encounter, and the consequent variations in time, distance, and shielding employed as protection against them.

The use of monitoring devices and the keeping of records of their readings form a recurrent theme through the picture. It makes

the dual point that radiologic safety records are used to provide both immediate protection for hospital personnel and a basis on which the staff can reevaluate and improve technics—always with the purpose of keeping the exposure of each person below the established maximum permissible levels.

If prints of this film are not available through your usual Navy source, address inquiry to Officer in Charge, Film Distribution Division, U.S. Navy Publication Center, Naval Station, Washington, D. C. Civilian organizations interested in borrowing prints should make requests to Director, Medical Film Section, Audio-Visual Division, Naval Medical School, Bethesda, Md.

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Panel on Automatic Data Processing -
Federal Hospital Institute Alumni Meeting

The Federal Hospital Institute Alumni Association is sponsoring a panel discussion on the use of Automatic Data Processing in Hospital Administration, Clinical Care, Medical Statistics and Medical Research at the 63rd annual meeting of the American Hospital Association in Atlantic City, N. J. This presentation will be made in Room B of the Convention Hall at 0930 on 26 September 1961. The participants will be:

COL Louis B. Arnoldi MC USAF
LTCOL David Tatch MSC USA
CDR Forbes H. Smith MSC USN
Dr. Norman Shapiro USPHS
Dr. Clyde B. Cope VA

The Federal Hospital Luncheon, sponsored this year by the Department of the Army, will be held on Tuesday, 26 September at the Claridge Hotel in Atlantic City during the Annual Convention of the AHA. The Honorable Elvis J. Stahr Jr, Secretary of the Army, will be the speaker.

The price of tickets is \$4.50 each; they may be obtained from CDR L. W. Miller MSC USN, Bureau of Medicine and Surgery, Code 31A, Room 2226, Navy Department, Washington 25, D. C. Checks or money orders should be made payable to the American Hospital Association. Tickets must be purchased prior to 15 September 1961.

* * * * *

Inhalation Anthrax - Delaware County, Pennsylvania

Morbidity and Mortality Weekly Report, Public Health Service,
U. S. Department of Health, Education, and Welfare (Prepared
by Communicable Disease Center, Atlanta 22, Ga.)

On June 27, 1961, a 52-year old woman, secretary in a goat hair and wool processing plant near Philadelphia, died after a short illness of suspected inhalation anthrax. Employees in the mill where she was employed had experienced cases of cutaneous anthrax in the past. The plant is participating in an anthrax vaccine evaluation program, but because the office staff was not included in the program, the patient had received no vaccine.

This employee complained first of chest and back pain on Friday, June 23, followed by extreme fatigue and intense sweating, but was able to complete her work day. Because of the increasing severity of symptoms, she was hospitalized on Saturday, June 24. Examination at that time revealed a normal temperature, remarkably negative physical findings, but some prominent lymph nodes in the left hilus by x-ray. Pending definitive diagnosis, the patient was given supportive therapy only.

On Tuesday, June 27 at 2:00 a. m., her condition abruptly deteriorated and despite heroic efforts, she died 4 hours later. At autopsy, a hemorrhagic mediastinitis was the most notable finding. Organisms resembling *Bacillus anthracis* were noted from smears of exudate and later from cultures. This organism has been confirmed as *B. anthracis* by phage studies.

Intensive environmental and epidemiologic studies have been instituted by Dr. Herman Gold, plant physician, a team from the Pennsylvania Department of Health, and the Communicable Disease Center. (Reported by Dr. Ernest J. Witte, Chief, Veterinary Public Health Section, Pennsylvania Department of Health.)

* * * * *

From the Note Book

Prolonged Use of Guanethidine. After 18 months' experience with guanethidine, the author's initial clinical findings were supported. Tolerance did not develop and important side effects did not appear. Arterial pressure measured in the supine position was controlled in some patients when given guanethidine alone; in many others, when a diuretic was added. The author considers guanethidine to be the most satisfactory antihypertensive he has studied to date. (Irvine H. Page, Med Clin N Amer, March 1961)

Triamcinolone in Asthma. Studies in 39 asthmatic patients including a double-blind study in 20, comparing triamcinolone with prednisone, confirmed an earlier clinical impression that triamcinolone produced somewhat better clinical effects than prednisone or similar corticoids. Side effects from triamcinolone in the patients taking maintenance dosage were minimal. (L. Tuft and V. Heck, Amer J Med Sci, May 1961)

Cutaneous Side Effects from Triparanol. Seven patients experienced cutaneous side effects while being treated with triparanol (MER-29) for hypercholesteremia. Two males had clinical ichthyosis, alopecia, and loss of hair color; five females had pronounced loss of scalp hair, two of whom also experienced some loss of body hair. All effects appear to be reversible when use of the drug is stopped or the dose is decreased. Patients receiving Triparanol should be observed closely for cutaneous side effects, particularly if they are receiving more than 250 mg per day. (R. Achor, et al, Proc Mayo Clin, April 26, 1961)

Sarcoidosis Treated with Chloroquine. Chloroquine has been administered to seven patients with chronic sarcoidosis. In each instance, there was considerable improvement of the cutaneous lesions. Regression of extracutaneous lesions was more variable, but improvement was often observed. Associated with the clinical response, elevated sedimentation rates and high gamma globulin levels returned toward normal. (S. Morse, et al, Amer J Med, May 1961)

Rectal Cortisone in Colitis. Rectal instillations of hydrocortisone sodium succinate were used to treat patients with chronic ulcerative colitis who were refractory to moderate dosages of steroid given orally. Results were not so favorable as those in some previous studies in which this treatment was used for selected patients having disease of mild to moderate severity. Since absorption of hydrocortisone from the distal portion of the colon occurs only to a limited degree, larger doses may be given by this route than by mouth without producing toxic effects. (L. Hershenson and M. Hershenson, Amer J Dig Dis, June 1961)

A Quote on Using New Drugs. Do not rashly use every new pharmaceutical product of which the peripatetic siren sings. Consider what surprising reactions may occur in the laboratory from the careless mixing of unknown substances. Be as considerate of your patient and yourself as you are of the test-tube. —Sir William Osler

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BUMED NOTICE 1910

21 July 1961

Subj: Reports of Boards of Medical Survey

Ref: (a) BUMEDINST 1910.2C
(b) MANMED Chap 18, Sec III

Purpose. To invite the attention of addressees, with the view toward corrective action, to certain discrepancies noted upon review of subject reports.

Background. Detailed procedures for effecting discharges of certain enlisted members upon the recommendations of boards of medical survey are set forth in reference (a), and detailed procedures for the preparation of the reports of boards of medical survey are set forth in reference (b). It is noted, however, that in some instances the preparation of subject reports was not in accordance with reference (b) and that discharges are effected without compliance with all the requirements of reference (a). Since these requirements are predicated upon laws relating to separation by reason of physical disability, it is essential that established procedures be strictly adhered to. (The instruction continues with discrepancies noted, further information, action required, and cancellation date.)

BUMED INSTRUCTION 1520.7B CH TRANSMITTAL 7 July 1961

Subj: CH-3 to BUMED Instruction 1520.7B, Subj: Medical Internship and Residency Training Policy

Purpose. This Change Transmittal cancels changes 1 and 2, (enclosure (1)) to BUMED Instruction 1520.7B. (The information will be incorporated in the revision of BUMED Instruction 1520.10A.)

BUMED NOTICE 6010

14 July 1961

Subj: Admission Record, NAVMED - 1285 (3-61)

Purpose: To announce that a (3-61) revision of the Admission Record NAVMED-1285 (8-51), listed in reference (a), has been completed and will be available as a seven-part, carbon-interleaved assembly.

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AVIATION MEDICINE DIVISION



School of Naval Aviation Medicine Opened Doors Twenty-Two Years Ago

In November 1939, the Naval School of Aviation Medicine at Pensacola opened its doors to its first class of nine students. Since that time, over 2400 flight surgeons have passed through the school and on to duty with the Navy's air arm.

Currently, classes convene three times a year, graduating about 100 new flight surgeons a year. The course then, as now, consists of 24 weeks of intensive study, the last 6 weeks being flight familiarization. The academic curriculum covers the aviation aspects of a wide variety of medical specialties and such military subjects as medical administration and military law. Clinical experience with patients is provided in departments such as ophthalmology, otolaryngology, and neuropsychiatry.

The student flight surgeon gets insight into aviation problems by attending basic ground school and those who qualify physically actually solo in the T-34 training plane.

Aviation medicine research was added to the duties of the school in 1942, and since then it has become an increasingly complex and important part of the school's mission. The doctors and scientists use tools in their research that are little more than big words to the outsider, devices such as the infrared spectrophotometer and the vectorelectrocardiograph. Machines such as the slow rotation room and the human disorientation device appear almost stranger than fiction.

The human disorientation device (HDD) fills a two-story building at the school and is apparently well-named. The HDD rotates in not one but two directions at the same time and electronic programming allows an almost endless combination of directions. The research tool is used in motion sickness and disorientation studies by the school. The slow rotation room might be just another room except that it is built on an axis so that it rotates. Equipped for overnight or longer occupation, it is used for studies in motion sickness and disorientation, although at a slower rate of spin and for longer periods than the HDD.

Over 900 reports and special projects have been completed at the school. The reports have included investigations into such

varied subjects as cosmic radiation, pilot candidate selection, disorientation in pilots and brain wave studies. Staff members of the school include specialists in fields such as radiobiology, biophysics, audiology, acoustics, neurophysiology, cardiology and psychology. In addition to research and training, much of the work of the school is the actual practice of aviation medicine in clinics.

Senior flight surgeons are usually members of the Special Board of Flight Surgeons of the Naval Aviation Medical Center. The board reviews aviation cases on referral from bases throughout the Navy and makes recommendations regarding their flight status.

Likewise, medical specialists of the school keep a close watch on the physical condition of men in the flight training program at Pensacola. Flight surgeons of the surrounding fields refer problem cases to the school. The school doctors also attempt to spot men in the flight program who are not mentally or physically qualified for the difficult job of flying.

Thus, the school is mainly occupied with aviation medicine research, training and practice, but more and more emphasis is being directed toward problems of outer space travel. Just as with Naval aviation's beginning in 1911, it's almost impossible to project the future of Naval aviation medicine.

* * * * *

A Study of Physical Defects Found in Prospective Flight Students

LCDR A. J. Grote MC USN, School of Aviation Medicine, Naval Aviation Medical Center, Pensacola, Fla.

In view of the large number of students accepted for the flight training program and found physically disqualified on their initial examination on entrance into Pre-Flight, data on these individuals was collected for a period of 4 months (July, August, September, October 1960). Records of the Naval Air Basic Training Command, U. S. Naval School of Aviation Medicine and U. S. Naval Hospital, Pensacola, Fla., were reviewed. Of particular interest were the types of defects found and the stations from which they were received. During this period 47 students were eliminated because of physical reasons found on initial examination.

Over and above the obvious expense incurred by the Navy in transporting these men from their home or station to Pensacola and return, there are many other factors which must be considered.

These are: (1) Additional expense and time expended in processing applications, records, examinations, et cetera; (2) Cost of moving the man's family to the Pensacola area in the case of married men; (3) Inconvenience to the man himself who not infrequently quit school or work or failed to enroll, thus missing a year of schooling; (4) Morale of the men concerned; (5) Loss of other qualified men who would have been accepted in place of the disqualified ones; (6) Poor publicity for the Navy, particularly the Medical Department, from the man, his family, and within the Navy from the Line personnel concerned with training. In several instances such as these, resentment has reached Congressional level; and (7) Temporary loss of manpower by the military.

From available data, it is impossible to determine the actual cost to the Government resulting from 47 inadequate examinations during this short period. The other detrimental effects listed above would apply in some cases and not in others. Not all of the 47 men failed to enter the flight program in one capacity or another. Some were eligible for myopic and acoustic study groups or one of the Aviation Observer programs. It should be noted, however, that otherwise disqualified persons should not be sent to the Training Command because of the existence of those special groups. Eight of the group were placed in one of the study groups or given a waiver. Twelve men appeared before a Clinical Board at the U. S. Naval Hospital and were discharged as unfit for military service.

Physical defects found on examination are listed below:

Decreased auditory acuity	10
Decreased visual acuity	10
Excessive phoria or tropia	7
Defective depth perception	4
Defective color vision	1
Excessive astigmatism	1
Insufficient accommodation	1
Internal derangement (knee)	3
Dental malocclusion	2
Asthma	2
Chronic schizoid personality	1
Glycosuria	1
Bronchiectasis	1
Paralysis of left calf	1
Traumatic weakness and neuralgia of arm	1
Congenital lumbar spine anomaly	1
History of migraine headaches	1
History of duodenal ulcer	1

The greatest number of persons were disqualified because of visual defects (49%). Decreased auditory acuity eliminated 21%, and other physical findings or significant factors in the medical history accounted for the remaining 30%. Not all physical findings or facts in the history are thoroughly covered in the section under Physical Standards for Aviation in the Manual of the Medical Department. Thus, the evaluation is often dependent on the opinion of the examining medical officer. This will, of course, lead to differences of opinion as to the man's acceptability. These cases would be expected to account for most of those found to be disqualified on arrival in Pensacola. Only 30% fall in this group, however, while the remaining 70% are eye or ear problems, all of which exceed a definite numerical standard which, if accurately examined, should offer no problem in determining acceptability.

There are numerous possible explanations for missing these defects on the original examination. The following are thought to be significant.

1. Recruiters are given quotas which they are expected to meet. Pressure applied to them is often passed to medical personnel, urging them to qualify individuals.
2. Inexperienced personnel giving parts of the examination, often with equipment with which they are not thoroughly familiar.
3. Improper use of examining instruments or equipment. Several instances have occurred in which the Verhoeff test for depth perception was given without the light being turned on or the frame being presented obliquely to the man being tested.
4. Uncalibrated or non-standard testing facilities. This is particularly true of audiometers which are often in use for years without calibration. Instructions are explicit in the Manual of the Medical Department regarding the construction, lighting, and painting of eye lanes. Seldom are these so constructed; even the use of the wrong paint will affect visual acuity.
5. Erroneous or improper responses by applicants on various tests. In the case of men with known defects who have been tested sufficiently to become aware of the required response, it is conceivable that false responses may be given in order to pass. Lack of proper instructions prior to taking a particular test might also lead to false results.
6. Falsification of the findings by the examiner. Several individuals who have appeared before the Special Board of Flight Surgeons stated that they did not pass the original examination (Verhoeff and visual acuity), but nevertheless were accepted.
7. Failure to retest questionable or "borderline" cases when barely passing results are obtainable.

8. Possible unfamiliarity with the need for meeting rigorous standards, the physical requirements demanded by aviation activity, or the possible consequences of allowing persons not meeting these requirements to fly.

9. False statement or omissions on Form 89. In some cases, applicants have been reportedly advised to omit checking certain items by recruiters, corpsmen, or even medical officers as it would be detrimental to their chances.

10. Carelessness and disinterest resulting in incomplete examinations or review of the medical history.

Alleviation of the problem must be done on a local level. Information regarding the necessity for accuracy, consequences of poor examinations, proper methods of examination, and use of proper equipment should be disseminated and stressed. The following recommendations, when locally implemented, will materially assist in solving the problem.

1. Impress recruiting and examining personnel with the results of passing a man not actually qualified, both in cost and the other factors listed.

2. A complete and thorough examination will be done on arrival at Pensacola and defects will be detected.

3. Corpsmen performing parts of the examination (visual and auditory) should be educated as to the necessity of accurate examinations. Upon reporting to a station or on arrival of new corpsmen, the flight surgeon should assure himself that examinations are being done properly, that designated equipment is being used, and that it is used in the correct manner. At intervals these procedures should be rechecked.

4. Stations performing initial examinations should evaluate their facilities so that some standardization is accomplished. Do eye lanes conform to specifications? Has the audiometer been calibrated? Is it located in a noise-free or low ambient noise area? For visual tests, are the proper distances and light intensities used?

5. Recheck on 3 or 4 successive days those persons with borderline findings.

6. Place more emphasis on the general physical examination and history with careful evaluation of each item checked. Such positive items are not to be routinely marked "NCD" merely because a specific event occurred years previously.

7. Applicants should be warned of possible repercussions if false statements or omissions are made on Form 89.

8. Examiners will adhere to the present aviation standards of such tests as the AOC color plates for color vision and spoken

or whispered voice tests for hearing.

9. If the standard testing instrument such as the Farnsworth Lantern or Audiometer is not available, the examination will not be considered complete until the examinee has been tested with the required equipment.

The Aviation Medicine Division of BuMed submits these comments relative to this article:

"The preceding report is considered to reflect the nature and scope of a continuing problem which has faced the School of Aviation Medicine over a period of many years. Although candidates for flight training are required to be adequately examined by qualified flight surgeons prior to reporting to Pensacola, it has always been necessary to do recheck physical examinations upon these candidates immediately upon their reporting. Flight safety is involved. These rechecks are considered to be a proper function of the School of Aviation Medicine and are required as a positive service to the Naval Air Training Command. The workload is considerable but the results have been worthwhile.

Whenever disqualifying defects are detected in these candidates for flight training there is automatically generated a requirement for detailed and complete studies with the attendant demands on the time of the already busy specialists within the School of Aviation Medicine and the U. S. Naval Hospital, Pensacola. Ultimately, most of these cases are processed through the Special Board of Flight Surgeons which meets weekly at the U. S. Naval Medical Center. Much of this workload could be avoided if greater care were exercised in Aviation Medical field activities throughout the Navy in carrying out more accurate physical examinations. From the economic viewpoint much could be saved if a greater effort were made to insure that unqualified personnel and marginal cases are not sent to the Training Command. The morale problems that could be avoided are obvious.

Therefore, the Bureau of Medicine and Surgery strongly encourages all Flight Surgeons to be extremely careful and thorough in the original examination of all candidates for flight training. "

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AN ITEM FOR THE FIRST AID KIT: Now available on the supply table is a plastic airway for use in artificial respiration attempts. Nomenclature: AIRWAY, Pharyngeal, plastic, adult-child FSN 6515-660-0046.

AN OPEN LETTER TO ALL FLIGHT SURGEONS

Dear Doctor:

Your recent MOR has been studied and found lacking in a number of areas. The Naval Aviation Safety Center cannot fulfill its mission if the flight surgeons in the field fail to properly apply their training and talent to furnishing all the information possible and making well-thought-out conclusions and recommendations.

OPNAV P-3750.6D, Navy Aircraft Accident, Incident, Flight Hazard and Ground Accident Reporting Procedures, (Section H), gives complete and detailed instructions and guidance. You can rest assured that your MOR's receive close scrutiny by experts. If necessary, your report is sent to a laboratory such as the Air Crew Equipment Laboratory at Philadelphia or the Aviation Medicine Acceleration Laboratory at Johnsville, Pa., for study. By this means, beginning with aircraft design and ending with pilot instruction and procedures, other lives may be saved. Therefore, it behooves you to use your diagnostic acumen and be alert and accurate.

Section B indicates that you were not notified to participate in the field investigation or deliberations of the accident board. We are all aware that sometimes the medical officer member has to make himself known, rather than wait until someone calls on him. OPNAV P-3750.6D, Para. 29, sets forth the basic composition of aircraft accident boards. A medical officer can frequently learn as a result of his own initiative as well as make a great contribution to the explanations of the enigmas surrounding an aircraft mishap.

It is a common thing to review an MOR and find all or much of Section C blank. However, Section E of Page 2 should never be left blank.

You listed the equipment worn by the pilot in Section F, but gave no description of damage to that equipment. Thus, a wealth of information is lost to us. Had none of this equipment been recovered, it would be understood why no comment was made.

On Page 5 under Section H you state that no ejection was attempted. There is some doubt about this. The outer catapult tube was located and showed evidence of ejection seat firing before impact. It is believed by some that this pilot may have ejected while upside down and entered the water upside down. To help establish the "yes" or "no" of this, an autopsy would have been helpful. The results may not have conclusively ruled ejection in or out. However, they could have added weight on one side or the other. A detailed description of the injuries may have helped greatly.

It is well recognized that the military must maintain good relations with the decedent's family. However, seldom are there any noticeable hard feelings generated over the delay of burial when tact and diplomacy are employed while time is consumed as a result of doing an autopsy.

Your MOR is completely devoid of any conclusions and recommendations. This is evidence of your having given poor thought to the preparation of a report which should have played a vital role in the Naval Aviation Safety Program.

Photographs of the pilot's helmet, flight suit, shoes, and related equipment, along with appropriate comments by you, should have accompanied your MOR. The value of these cannot be measured.

We hope that the comments made in this letter will be used by you as guidelines for improved reporting next time you submit an MOR. Remember, as a flight surgeon YOU bear a share of the responsibility for aviation safety.

Sincerely,

P. S. These remarks were engendered by an actual report. We could go on at length with our listing; however, this report made us think we had hit rock bottom.

P. P. S. We DO get many outstanding reports!

* * * * *

Project RAM

For the past 13 years Project RAM (Research, Aviation Medicine) has broadly applied telemetry as a tool in both basic and applied research on aviation medical problems, and by means of telemetry has extended aviation medical services to remote installations. The project's objective is "to develop adequate and suitable pickups, to detect the desired physiologic responses to be transmitted, and to perform tasks as desired to evaluate the stamina of men and animals in flying aircraft or missiles."

From a simple beginning—one officer, two hospital corpsmen, and one electronics technician—the project has grown in complement and capability. The main facility at the Naval Medical Research Institute, Bethesda, Md., includes a modern electronics laboratory and a low-pressure chamber that is capable of simulating

altitudes of 150,000 feet and temperatures down to minus 70 C. Another important tool is the airborne telemetering sending and receiving station built into an R5D aircraft (DCf) which is under the operational control of the Air Programs Division of the Office of Naval Research. This "flying laboratory" has some unique capabilities that lend themselves readily to research problems. Not only is it equipped with a single sideband radio but with facilities for airborne transmission and reception of television signals.

* * * * *

RESERVE



SECTION

Retirement Point Credit Policy Redefined
For Attending Professional And Trade Meetings

The requirements for earning retirement points for attending military seminars held in connection with professional or trade conventions have been redefined and reestablished to provide uniformity among the branches of the Armed Forces.

As a means of conducting Naval Reserve instruction, Navy activities are authorized to sponsor military seminars, symposia, or similar training assemblies in connection with professional or trade conventions; however, these activities must be in addition to the regular agenda and program of the convention.

Retirement point credit for Reserve instruction carried out under this policy may be granted only when:

- a. The Reserve instruction is sponsored, supervised, and conducted by one or more of the military departments and is of at least two hours duration.
- b. Participation of Reservists—and the awarding of retirement point credit—has been approved previously in each instance by the Chief of Naval Personnel.
- c. Each individual takes part in his capacity as a Reservist, and devotes his time and effort beyond that normally associated with his civilian occupation.
- d. The Reservist's participation is without remuneration other than the pay to which he may be entitled as a Reservist.

(On succeeding 3 pages are graphs depicting the Point System)

RETIREMENT POINT CHART

(Prepared by the Reserve Officers Recording Activity, Omaha, Nebraska from BuPers Instruction 1820.1B)

DATE	ACTIVE DUTY	INACTIVE DUTY	CORRESPONDENCE COURSES	ACTIVE DUTY FOR TRAINING	DRILLS, APPROPRIATE DUTY AND EQUIVALENT DUTY	SPECIAL INACTIVE DUTY TRAINING	GROUP TRAINING DUTY	MEMBERSHIP (gratuitous)
	1	2	3	4	5	6	7	8
Prior to 7/1/49	1 point per day	50 points for each 365 days (May be pro-rated)	NONE	1 point per day	NONE	NONE	1 point per day	NONE
7/1/49		7/1/49 NONE	7/1/49 Points credited on number of assignments completed within each anniversary year		7/1/49 1 point per drill as authorized in BUPERSINST 5400.1 series	7/1/49 1 point per day credited as training duty	7/1/49 1 point per day as authorized by Article H-3603 BuPers Manual	7/1/49 15 points per anniversary year
1/1/53			1/1/53 Points credited by 12 point units as authorized in BUPERSINST 1500.1 series					
2/3/54						2/3/54 1 point per day credited as inactive duty training		
NOTE 1. Points since 7/1/49 for duty in columns 3, 5, 6, and 8 may not exceed 60 points per anniversary year. 2. Subsequent to 7/1/49 points are not creditable for duty in any column performed while on the Inactive Status List.								

THE VALUE OF A RETIREMENT POINT

	Over 20 Years			Over 22 Years			Over 26 Years		
Pay Grade (Rank)	Monthly Base Pay	Monthly Value of One Point	Capital-* ized @ 3%	Monthly Base Pay	Monthly Value of One Point	Capital-* ized @ 3%	Monthly Base Pay	Monthly Value of One Point	Capital-* ized @ 3%
O-8-RADM (Upper Half)	\$1,300	\$.09028	\$36.11	\$1,350	\$.09375	\$37.50			
O-7-RADM (Lower Half)	1,175	.08160	32.64						
O-6-CAPT	860	.05972	23.89	910	.06319	25.28	\$985	\$.06840	\$27.36
O-5-CDR	745	.05174	20.70	775	.05382	21.53			
O-4-LCDR	630	.04375	17.50						
O-3-LT	525	.03646	14.58						
WO-4-CWO	528	.03667	14.67	543	.03771	15.08	575	.03993	15.97**
WO-3-CWO	470	.03264	13.06	487	.03392	13.57	506	.03514	14.06
WO-2-CWO	417	.02896	11.58	440	.03056	12.22			
WO-1-WO	390	.02708	10.83						
E-9-MASTER CPO	430	.02986	11.94	440	.03056	12.22			
E-8-SENIOR CPO	370	.02569	10.28	380	.02639	10.56			
E-7-CPO	350	.02431	9.72						
E-6-PO1	290	.02014	8.06						
E-5-PO4	240	.01667	6.67						
E-4-PO3	190	.01339	5.36						
<p>* Capitalized @ 3% represents the money you would have to have in the bank to pay 3% annually, the value of one point monthly.</p> <p>** WO-4 for over 30 years service: Base Pay = \$595. Monthly value of one point \$0.04132.</p>									

PROMOTION POINT CHART

(Prepared by the Reserve Officers Recording Activity, Omaha, Nebraska from BuPers Instruction 1416.4C)

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DATE	ACTIVE DUTY USN-USNR	SATISFACTORY PARTICIPATION		DRILLS			NROS COURSES (Students & Instructors)	CORRESPONDENCE COURSES		COLLEGE AND RESIDENCY TRAINING	RESIDENT SCHOOLS
		50 POINTS	14 DAYS ACTIVE DUTY OR ACTIVE DUTY FOR TRAINING	OTHER THAN NROS	NROS OTHER THAN STUDENTS	NROS STUDENT		OTHER OFFICERS	MEDICAL OFFICERS		
		2	3	4	5	6		8	9		
7/1/49	NONE	12 points for each year during which at least 12 of the 50 retirement points were earned by means other than Correspondence Courses or gratuitous points.	NONE	NONE	NONE	NONE	NONE	Any course as evaluated.	Any course as evaluated.	NONE	As evaluated for schools completed in present grade - - credited as of 7-1-55.
7/1/50	1 point per month computed date to date - partial months of 15 days or more are credited as one full month.										
7/1/53	(USNR only)										
7/1/55	Same as above except two points per month. Creditable 7-1-57. (USNR only)	NONE	12 points per fiscal year for first 14 periods of Appropriate Duty or 14 days Training Duty or Active Duty (not creditable if points previously earned by duty in columns 4, 5 or 6).	12 points per fiscal year for 75% attendance, but no less than 12 drills (not creditable if points previously earned by duty in columns 3, 5 or 6).	12 points per fiscal year for 75% attendance, but no less than 12 drills (not creditable if points previously earned by duty in columns 3, 4 or 6).	12 points per fiscal year for 75% attendance, but no less than 12 drills (not creditable if points previously earned by duty in column 3, 4 or 5).	In grade and designator by Junior and Senior Groups.	In grade and designator by Junior and Senior Groups. Ensigns excluded from Junior Group until 7-1-57, any course credited as evaluated.		7/1/55 Same as above except on "release from active duty date", if released prior to 7-1-57.	7/1/55 Same as above except on "release from active duty date", if released prior to 7-1-57.
7/1/57	2 points per month same as above except points credited when occurring. (USNR only)		7/1/57 Same as above except (not creditable if points previously earned by duty in columns 4 or 5).	7/1/57 12 points per fiscal year for 75% attendance, but no less than 18 drills (not creditable if points previously earned by duty in columns 3 or 5).	7/1/57 12 points per fiscal year for 75% attendance, but no less than 18 drills (not creditable if points previously earned by duty in columns 3 or 4).	7/1/57 NONE				7/1/57 Same as above except Ensigns included in Junior Group after 7-1-57.	7/1/57 Same as above except credited as of 30 June of the fiscal year in which completed.
7/1/58	Same as above except promotion points for Regular Navy included in present grade for officers selected for promotion subsequent to 6 January 1959		7/1/58 Same as above except (not creditable if points previously earned by duty in columns 4 or 5).	7/1/58 12 points per fiscal year for 75% attendance, but no less than 18 drills (not creditable if points previously earned by duty in columns 3 or 5).	7/1/58 12 points per fiscal year for 75% attendance, but no less than 18 drills (not creditable if points previously earned by duty in columns 3 or 4).	7/1/58 12 points per fiscal year for 75% attendance, but no less than 18 drills (not creditable if points previously earned by duty in column 3, 4 or 5).		7/1/58 Same as above except effective 6 January 1959, former officers of the Regular Navy are credited promotion points earned in grade upon acceptance of a Naval Reserve commission.	7/1/58 In grade and designator by Junior and Senior Groups. Effective 6 January 1959, former officers of the Regular Navy are credited promotion points earned in grade upon acceptance of a Naval Reserve commission.	7/1/58 Same as above except effective 6 January 1959 former officers of the Regular Navy are credited promotion points earned in grade upon acceptance of a Naval Reserve commission.	NOTE: For officers listed on a promotion list, promotion points credited as of the date of the officers request.
7/1/60	(USN and USNR)	7/1/60 12 points per fiscal year for first 14 days of active duty or active duty for training (not creditable if points previously earned by duty in columns 4 or 5).	7/1/60 12 points per fiscal year for 75% of drills authorized for the unit or units or 75% of periods of Appropriate Duty but in no case less than 18 drills or Appropriate Duty periods (not creditable if points previously earned by duty in columns 3 or 5).	7/1/60 12 points per fiscal year for 75% of drills authorized for the unit or units or 75% of periods of Appropriate Duty but in no case less than 18 drills or Appropriate Duty periods (not creditable if points previously earned by duty in columns 3 or 4).	7/1/60 12 points per fiscal year for 75% of drills authorized for the unit or units or 75% of periods of Appropriate Duty but in no case less than 18 drills or Appropriate Duty periods (not creditable if points previously earned by duty in columns 3 or 4).	7/1/60 12 points per fiscal year for 75% of drills authorized for the unit or units or 75% of periods of Appropriate Duty but in no case less than 18 drills or Appropriate Duty periods (not creditable if points previously earned by duty in columns 3 or 4).		7/1/60 Same as above except effective 6 January 1959, former officers of the Regular Navy are credited promotion points earned in grade upon acceptance of a Naval Reserve commission.	7/1/60 In grade and designator by Junior and Senior Groups. Effective 6 January 1959, former officers of the Regular Navy are credited promotion points earned in grade upon acceptance of a Naval Reserve commission.	7/1/60 Same as above except effective 6 January 1959 former officers of the Regular Navy are credited promotion points earned in grade upon acceptance of a Naval Reserve commission.	

e. The Reservist's participation demonstrably improves his fitness to perform his military duties upon mobilization, or similarly improves the fitness of others by his supervisory responsibilities in connection with his taking part in the training.

Additional information may be found in BUPERS NOTICE 1001 (3 May 1961).

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Policy Changes on Transfer of Naval
Reserve Officers to or from Inactive Status

The Chief of Naval Personnel recently promulgated policy changes affecting Naval Reserve officers who are members of the Inactive Status List (USNR-S2) or who, while in an active status, subsequently failed to earn at least 12 retirement points (exclusive of gratuitous points) during their applicable anniversary year.

Title 10, U. S. Code, requires the removal from an active status of all unobligated Reserve officers who fail to comply with minimum standards of participation prescribed by the Secretary concerned. Navy Department directives implemented this provision of law, but due to administrative limitations provided for removal from active status only those officers entering or in a promotion zone. Article H-3705, Bureau of Naval Personnel Manual, prescribes that all officers, with certain exceptions, will be removed from active status without regard to promotional zones. Because of recently imposed numerical ceilings which limit the number of Naval Reserve officers authorized in an active status, it is necessary to screen officers most carefully to insure that only those who maintain a reasonable degree of proficiency by active duty and/or active participation in the Naval Reserve Training Program are retained or allowed to transfer to an active status.

Effective immediately, officers will not be reinstated to an active status unless it is determined that there is a mobilization need for officers of their grade and qualifications.

Commencing in December 1962, all officers who failed to earn 12 retirement points (exclusive of gratuitous points) in their anniversary year ending in fiscal year 1962 or any fiscal year thereafter, will be removed from active status effective 31 December following the end of the applicable fiscal year. Records of such officers will be presented to the Naval Reserve Officer Mobilization Disposition Board for a determination of the officers' mobilization potential relative to mobilization requirements. Those officers for whom a requirement exists may be transferred to and retained on the Inactive Status List (USNR-S2) for the maximum period allowed by applicable directives.

All others will be required to transfer to the Retired Reserve if eligible, to resign, or be discharged.

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Veterans Administration Booklet

Interested in the latest word on federal benefits for veterans? The 1961 edition of Federal Benefits for Veterans and Dependents, VA Fact Sheet IS-1, is now available.

The booklet lists all major benefits available to veterans and their dependents, explains eligibility requirements, describes the nature of the benefits, and indicates where application should be made.

Copies may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. The single copy price is 15 cents; a discount is available for quantity purchases. (The Naval Reservist, July 1961)

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DENTAL



SECTION

Anniversary Greetings from the Surgeon General

Rear Admiral E. C. Kenney MC USN, the Surgeon General of the Navy, addressed the following letter, dated 27 July 1961, to Rear Admiral C. W. Schantz DC USN, Assistant Chief for Dentistry and Chief, Dental Division, Bureau of Medicine and Surgery.

"Dear Admiral Schantz:

As we approach the 49th anniversary of the Naval Dental Corps, I want to extend my sincere good wishes to you and all Dental officers of the Navy and Naval Reserve.

As Chief of the Bureau of Medicine and Surgery, I am indeed proud to be associated with the Dental Corps. The outstanding accomplishments of the Naval Dental Corps in providing for the dental health

needs of the active duty personnel of the Navy and Marine Corps and their dependents, when authorized, were the results of an intensive leadership program which concentrated the efforts of all dental personnel in reducing the cost of operation and increasing the quantity and quality of dental procedures.

Dentistry is fortunate to have Naval officers and dental technicians dedicated to improving the posture of the profession as a whole. Such accomplishments as the increased emphasis placed on a program of preventive dentistry, the production of the training movie, Oral Hygiene, and the increased efforts in the field of the use of dental assistants are ones that will reflect their wisdom not only within the Navy but also in the civilian profession as well.

The active support and participation of the Dental Corps at both foreign and domestic dental society meetings are evident by the fact that over 150 such officers gave willingly of their time and talents to such endeavors. These actions reflected much credit upon the Navy.

I am looking forward to a continuation of these efforts which marked the first 49 years of the Naval Dental Corps.

Sincerely yours,

/s/

E. C. KENNEY"

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Lactobacillus Acidophilus and Bulgaricus
in Treatment of Herpetic and Aphthous Stomatitis

LCDR P. L. Abbott DC USN, USS VALLEY FORGE. Viable Mixture of Lactobacillus Acidophilus and Bulgaricus in Treatment of Herpetic and Aphthous Stomatitis. J Oral Surg Anes & Hosp D Serv 19:310-312, July 1961.

The control and treatment of herpetic and aphthous stomatitis usually persists for 14 to 21 days, and methods of treatment to date have been relatively ineffective. The local application of caustics to the lesions is used by some, although the results obtained are temporary and the method impractical when the condition is generalized. Warm mouth rinses provide a measure of comfort for the patient but do not alter the course of the disease. The intradermal injection of smallpox vaccine has been recommended by Savitt and Ayres. Antihistaminic drugs

were reported to be ineffective by Kutscher, Silvers, and Zegarelli. Chlortetracycline hydrochloride is of value in controlling discomfort due to secondary infection. Remfjord reported varying degrees of relief from recurrent herpetic gingivostomatitis after administration of gamma globulin.

In an attempt to find a more effective medication for the treatment of herpetic and aphthous stomatitis, a viable mixture of *Lactobacillus acidophilus* and *bulgaricus* (Lactinex) has been evaluated. This mixture is available in tablets and granules. One packet of granules (1.0 gm) is equivalent to 4 tablets. The mixture is administered by mouth and followed by a glass of milk. The milk acts as a culture medium for the *acidophilus* and *bulgaricus* bacilli.

Between 1 July 1959 and 31 December 1959, 46 children were referred from the pediatric service to the dental service at the U. S. Naval Hospital, Jacksonville, Fla., for treatment of acute generalized herpetic gingivostomatitis. The ages of the children ranged from 9 months to 12 years. The most commonly reported patterns of the disease included a cold, sore throat, fever and malaise followed by the generalized vesicular eruptions occurring on the lips, tongue, buccal mucosa, palate, and oral pharynx. The vesicles ruptured, leaving bleeding ulcerations that were readily susceptible to secondary bacterial infection.

Because of tenderness in the oral cavity, the patients refused to eat or take fluids orally; therefore, the major concern, other than pain control, became that of maintaining adequate fluid balance and preventing dehydration. For example, 2 children in the group studied had oral lesions so severe that dehydration was imminent; hospitalization and intravenous administration of fluids became necessary.

In this study, 44 patients were given a 3-day supply of the viable mixture of *Lactobacillus acidophilus* and *bulgaricus* in tablet or granule form, and were instructed to chew four tablets or to take one packet of granules 4 times a day followed by a glass of milk. The patient was further instructed to report on the status of the lesions at the expiration of 3 days. If healing was not complete, additional medication was supplied. A progress report and brief history was kept on each patient; the dates when soreness was relieved and the lesions healed were noted.

The only medications given the 2 hospitalized children with herpetic gingivostomatitis was a thick *Lactobacillus acidophilus* and *bulgaricus*-milk inserted in the buccal vestibule 4 times a day along with saline solution and 5% glucose and water given intravenously. Within 24 hours each child was able to take fluids orally. The herpetic gingivostomatitis was completely healed in 5 days.

The results of treatment in the 46 children with herpetic gingivostomatitis were as follows: in 16% the lesions healed in 2 days,

in 43% in 3 days, in 22% in 4 days, in 11% in 5 days, and in 8% the lesions healed in 6 days.

Because of excellent results obtained in treating the children with generalized herpes, *Lactobacillus acidophilus* and *bulgaricus* was given to a group of 10 adults with past histories of recurrent herpes simplex lip lesions.

The mixture was given during the burning or itching stages before vesicular eruption in an effort to abort the lesions. In 100% of the patients, the vesicles never erupted. Although the group tested was small, it would appear that *Lactobacillus acidophilus* and *bulgaricus* is of value as preventive therapy in patients plagued with recurrent herpes simplex of the lip.

Also included in the clinical observation were 22 cases of recurrent aphthous stomatitis in adults treated with *Lactobacillus acidophilus* and *bulgaricus*. These patients ranged in age from 15 to 53 years. The majority of the lesions were single and occurred in various regions of the mouth. There was no apparent agreement among the patients as to the etiology of the aphthous lesions; however, the average untreated healing time was reported as 10 to 14 days.

This group was treated in the previously described manner, that is, 4 *Lactobacillus acidophilus* and *bulgaricus* tablets 4 times a day followed by a glass of milk.

The results of the treatment in patients with aphthous stomatitis were as follows: in 9% of the 22 adults the lesions healed in one day, in 23% in 2 days, in 36% in 3 days, in 23% in 4 days, and in 9% the lesions healed in 5 days.

In patients with aphthous ulcers, the soreness usually was relieved within 24 hours.

Lactobacillus acidophilus and *bulgaricus* does not prevent recurrence of the aphthous lesions, but patients reported complete freedom from the ulcers while taking the mixture. For example, one patient stated that drinking any citrus juice would cause eruption of the aphthous ulcers. By taking two tablets per day for a period of time, this patient could drink any citrus juice without occurrence of ulcers. Once the administration of *Lactobacillus acidophilus* and *bulgaricus* was stopped, citrus juice again caused the aphthous lesions. The reason for such a phenomenon is not clear, and more work is needed to determine what dosage of *Lactobacillus acidophilus* and *bulgaricus* would prevent the ulcers.

Forty-six patients with herpetic gingivostomatitis, 22 patients with recurrent aphthous stomatitis and 10 patients with herpes simplex of the lip were treated with a viable mixture of *Lactobacillus acidophilus* and *bulgaricus* and the results observed clinically. In 81% of the patients, the herpetic gingivostomatitis lesions were cleared in 4 days. In 68%, the aphthous lesions were cleared in 3 days. This

represents a 10-day reduction in healing time as compared with untreated cases. When the *Lactobacillus acidophilus* and *bulgaricus* mixture was given to the patients suffering from recurrent herpes simplex of the lip during the burning and itching stages of the disease, vesicular eruption was aborted in 100% of the patients treated.

Results of this clinical observation indicated that a viable mixture of *Lactobacillus acidophilus* and *bulgaricus* is effective in the treatment of herpetic and aphthous stomatitis. The mode of action of this bacterial mixture on these diseases has not been determined. Further laboratory and clinical studies of this viable mixture of *Lactobacillus acidophilus* and *bulgaricus* are indicated.

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Personnel and Professional Notes

Top Naval Dentists Get White House Duty. CAPTs John W. Pepper, Jr, and Theodore R. Hunley DC USN have been assigned temporary additional duty at the dental office in the White House.

CAPT Pepper attended Notre Dame University and received his dental degree from the University of Pennsylvania in 1940. He has received additional training in oral surgery at the Mayo Clinic, Minneapolis, Minn., and the Memorial Hospital in New York City.

CAPT Hunley received an AB degree from Oakland City College in 1938 and his dental degree from St. Louis University in 1945. In addition to his previous teaching experience, he is a qualified interpreter in French.

Both Dental officers are presently on the staff of the U. S. Naval Dental School, NNMC, Bethesda, Md.

CAPT Fisher Receives Training for Mobilization Billet. CAPT Alton K. Fisher DC USNR Professor of Stomatology at the State University of Iowa College of Dentistry, and a selectee for promotion to flag rank in the U. S. Naval Dental Corps Reserve, completed 2 weeks active duty for training in the Dental Division, Bureau of Medicine and Surgery, on June 25, 1961. CAPT Fisher has been assigned the mobilization billet of Special Assistant to the Chief of the Dental Division for Reserve matters, and his training was in accordance with a requirement that all Reserve flag officers take two weeks training annually in their assigned mobilization billets. This training consisted of a thorough indoctrination in all branches of the Dental Division, special day long sessions at the Bureau of Naval Personnel and the offices of the Chief of Naval Operations. Visits were made to all dental facilities in the Washington area with a 2-day field trip to the U. S. Naval Officer Candidate School, U. S. Naval Station, Newport, R. I.,

to observe the Dental Ensign 1925 Orientation Course in operation.

CAPT Fisher started his Naval Reserve career as an enlisted man and served as a lieutenant in the line until April 1941 when he transferred to the Dental Corps, remaining on active duty until April 1946. He has been Commanding Officer of the dental company at Iowa City, Iowa; has attended the Commanding Officers' Seminar, Naval War College; and completed other active duty for training.

CAPT Frechette Presents Papers. On 4 July 1961, CAPT A. R. Frechette DC USN delivered two professional papers, Improved Partial Dentures and Prosthetic Appliances Associated with Abnormal Jaw Relations, at the Atlantic Provinces Dental Convention held at Charlottetown, Prince Edward Island, Canada. CAPT Frechette is Commanding Officer of the U. S. Naval Dental School, NNMC, Bethesda, Md.

Naval Dental Officers Present Film. CAPT E. A. Walsh DC USN and the officers of the U. S. Navy Dental Corps on duty at the U. S. Naval Support Activity, London, presented a film, High Speed Dental Operations, prepared by the American Dental Association to members of the British Dental Association. The presentation was made in the new American Embassy in London on 3 July 1961, and was followed by a reception and discussion.

CAPT Walsh is the Senior Dental Officer at the Naval Support Activity.

CAPT Stagner Placed on Retired List. CAPT D. F. Stagner DC USN was placed on the retired list of the Navy after more than 30 years of active Naval service. He was born in Toledo, Ohio, and graduated from the School of Dentistry of the University of Denver in 1929; from 1920 to 1924, he was a member of the U. S. Naval Reserve. In March 1931, CAPT Stagner reported to the Shipyard, Brooklyn, N. Y., for his first tour of active service.

CAPT Stagner received postgraduate training at the Mayo Foundation in the treatment of jaw fractures and plastic surgery of the face. At Tufts College, he received further instruction in oral surgery.

During his career, he represented the Bureau of Medicine and Surgery at various professional meetings, including an Annual Meeting of the Association of Military Surgeons held in Boston, Mass. CAPT Stagner served as District Dental Officer, 8th Naval District, and as Commanding Officer of the U. S. Naval Dental Clinic, Guantanamo, Cuba.

Prior to his retirement, CAPT Stagner was on duty as Senior Dental Officer, U. S. Naval Air Station, Pensacola, Fla., with additional duty as Staff Dental Officer, Naval Air Training Command.

Standardized items

<u>Stock No.</u>	<u>Identification</u>	<u>Unit</u>	<u>Appx. Price</u>
FSN 6532-754-0919	APRON, X-ray, Protective: Radiopaque, lead impregnated plastic coat type; with two ties.	1 each	\$20.00
FSN 6525-721-9661	PLASTIC SHEET, Lead Im- pregnated, 1.0 mm lead equiv- alent; 6 ft long by 3 ft wide; approximately 3 1/4 lbs per square foot.	1 each	\$50.00

In the interest of providing maximum protection of patients from ionizing radiation of dental x-ray machines, all activities are advised of the availability of the standard items listed above.

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